

Border Environment Cooperation Commission

Wastewater Collection and Treatment Project for Barreales and Juarez y Reforma, Chihuahua

1. General Criteria

1.a Project Type	
Project Name:	Wastewater Collection and Treatment Project for Barreales and Juarez y Reforma, Chih
Project Sector:	Domestic Water and Wastewater Hookups and Wastewater Treatment
1.b Project Category	
Category:	Community Environmental Infrastructure Project – Community-wide impact
1.c Project Location and Community Profile	
Communities:	Barreales, and Juárez-Reforma, Municipality of Guadalupe, D. B.
Location:	The State of Chihuahua is located in the northern part of the Republic of Mexico, neighboring the United States of America (USA). Barreales, and Juarez y Reforma are located in the northeastern end of the State of Chihuahua, within the Municipality of Guadalupe, D.B., adjacent to Fabens, Texas. They are two of the 23 communities that compose the Juarez Valley, and are traditionally agricultural communities, although, due to their proximity with Ciudad Juarez, a significant portion of their residents are currently employed in <i>maquiladoras</i> established in the city.
Location Within the Border:	Within the 62 km border area, at approximately 0.5 miles from the U.S.-Mexico Border. Figure 1 shows the location of Barreales and Juarez y Reforma, within the Municipality of Guadalupe, D.B., in the northeastern end of the State of Chihuahua.

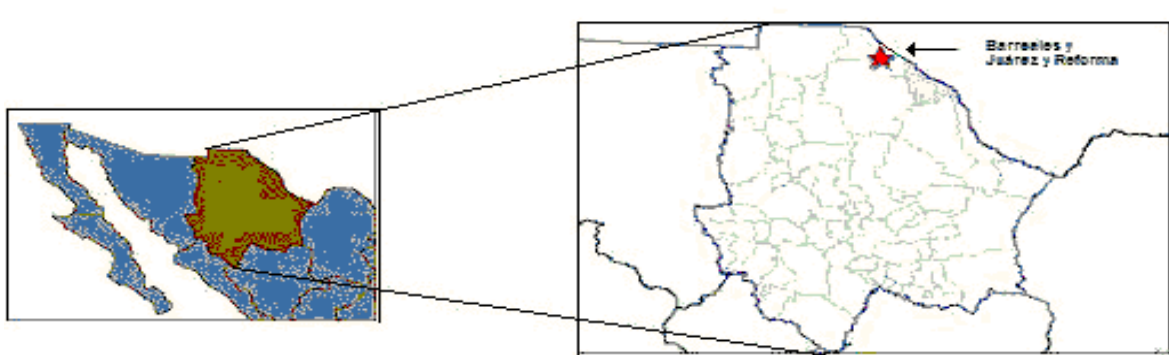


Figure 1. Location of Barreales, and Juárez y Reforma

Demographics

Current population:	2,539 residents
Growth rate:	1.28 %
Reference:	INEGI Year: 2005 CONAPO Year: 2007
Median per capita income:	\$ 3,517 Mexican Pesos
Reference:	NADB estimation based on statistics by INEGI and the National Commission on Minimum Wages
Primary economic activity:	Agriculture and cattle raising
Marginalization rate:	-1.16426 Low
Reference:	CONAPO 2008

Services

Community:	Barreales
Water System	
Water coverage:	97%
Domestic hookups:	296
Water supply source:	Groundwater (2 wells)
Wastewater Collection System	
Wastewater collection coverage:	23%
Sewer connections:	70
Wastewater Treatment	
Wastewater treatment coverage:	0%
Solid Waste	
Solid waste collection coverage:	100%
Street Paving	
Street paving coverage:	5%

Community:	Juarez y Reforma
Water System	
Water coverage:	97%
Domestic hookups:	295
Water supply source:	Groundwater (2 wells)
Wastewater Collection System	
Wastewater collection coverage:	8%
Sewer connections:	24
Wastewater Treatment	
Wastewater treatment coverage:	0%
Solid Waste	
Solid waste collection coverage:	100%
Street Paving	5%

1.d Legal Authority

Project Applicant:	Junta Central de Agua y Saneamiento de Chihuahua (JCAS) in coordination with the Junta Rural de Agua y Saneamiento de Porfirio Parra
Legal Representative:	Miguel Ángel Jurado Márquez
Legal Instrument to Demonstrate Legal Authority:	The legal authority of JCAS and JRAS is established in Article 1564 of the Administrative Code for the State of Chihuahua. The JRAS is authorized to provide the drinking water and sewerage services to the local community. Meanwhile the JCAS is the normative entity and the responsible for developing the improvement projects regarding the infrastructure of such services in Barreales, Juarez y Reforma communities.
Date of Instrument:	May 1 st , 1950.
Compliance with Agreements:	1889 International Boundary Convention 1944 Water Treaty 1983 La Paz Agreement, or Border Environment Agreement 1990 Integrated Border Environmental Plan (IBEP) 1994 North American Free Trade Agreement (NAFTA) Border 2012 Program

1.e. Project Summary

Project Description and Scope: Expansion of the Sanitary Wastewater Collection System in Barreales and Juarez y Reforma, and construction of an additional treatment module (7.81 lps.) in the Dr. Porfirio Parra wastewater treatment plant, to treat wastewater generated by these two communities.

Components:

Wastewater Collection

Expansion of sanitary wastewater collection systems in:

Barreales

- 7,953 linear meters of sewer lines with 20 to 38 cm. pipes, 93 manholes, and 220 domestic hook-ups.

Juárez-Reforma

- 10,871 linear meters of sewer lines with 20 to 38 cm. pipes, 104 manholes, and 295 domestic hook-ups.

Wastewater treatment

Construction of a wastewater treatment module with capacity for 7.18 lps in the Dr. Porfirio Parra Wastewater Treatment Plant.

Population Served: 2,539 residents

Project Cost: US \$2,617,781 dollars

Project Map:

Figures 2, 3, and 4 show the wastewater collection systems proposed for Barreales and Juarez y Reforma. Figure 5 shows the proposed wastewater treatment system.

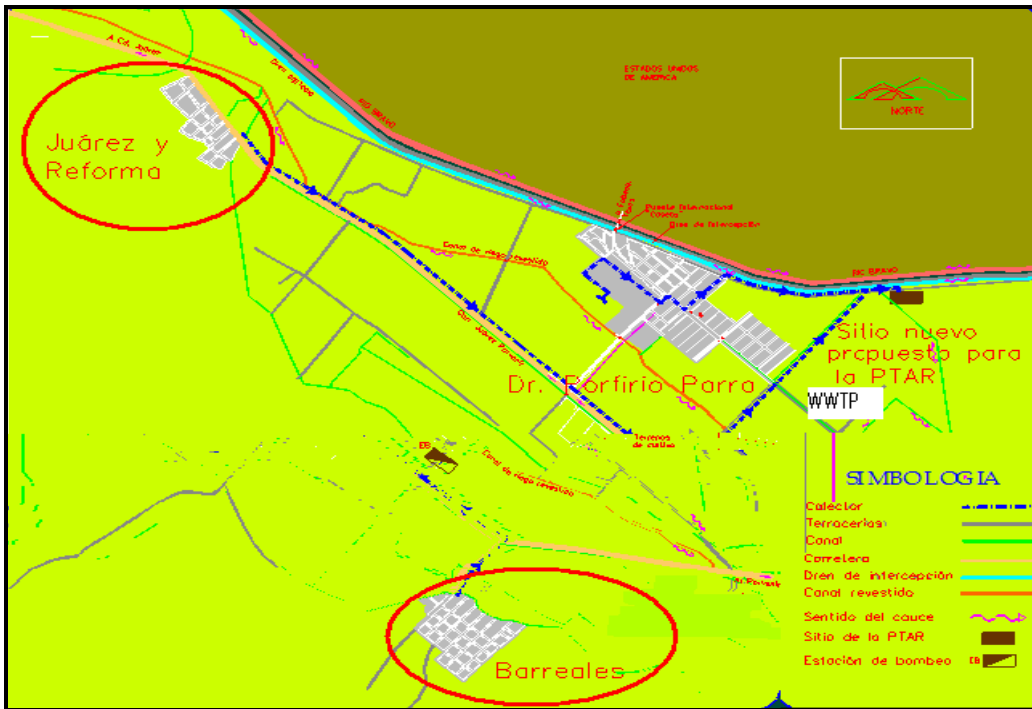


Fig.2 Project Location

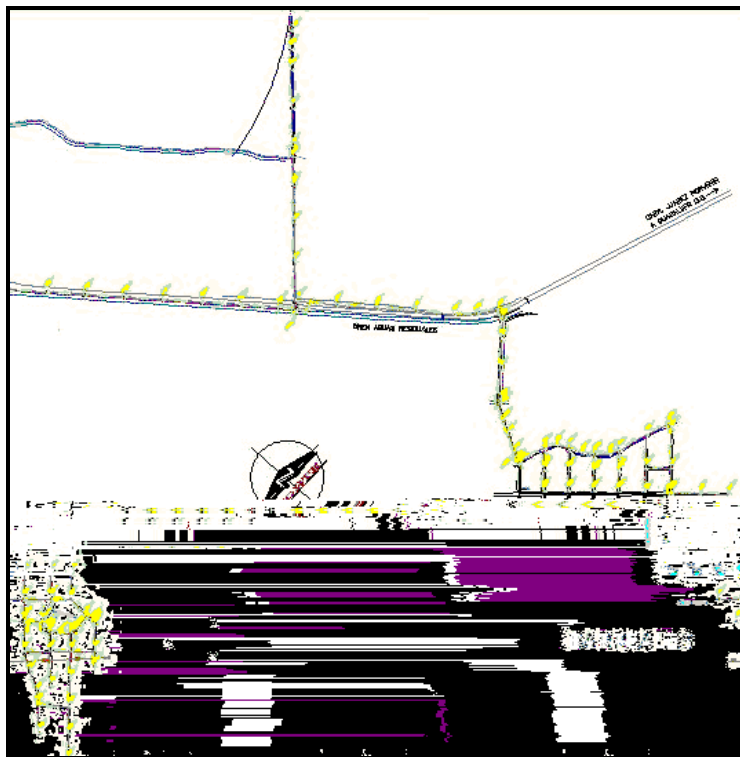


Fig. 3 Wastewater collection system in Barreales

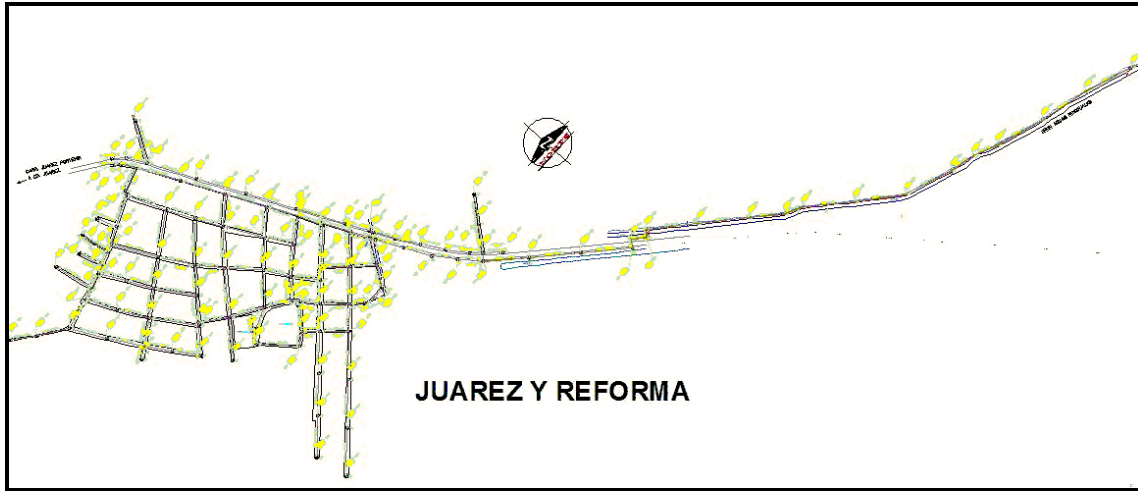


Fig. 4 Wastewater collection system in Juárez-Reforma



Fig. 5 Wastewater Treatment Plant in Dr. Porfirio Parra

Project Justification

Project Justification:

The proposed wastewater collection and treatment works will help collect 100% of the wastewater produced by the two communities, reducing thus the potential for human contact with raw wastewater and vectors for associated diseases.

The introduction of sanitary sewage services in both communities, as well as the new 515 sewer hook-ups, will also reduce the potential for groundwater and surface water contamination by eliminating the use of latrines, septic tanks, and wastewater discharges to open

	drains. The contamination resulting from the discharge of untreated wastewater will be reduced by building a treatment module with capacity for 7.18 lps to serve these two communities.
Urgency of the Project or Consequences of No Action:	The lack of these services jeopardizes the health of area residents due to the increased rate of gastrointestinal diseases.
Prioritization Process Category:	Category 1

Pending Issues:

None.

Criterion Summary:

Wastewater generated by the Barreales and Juarez y Reforma communities will be collected and conveyed to the Wastewater Treatment Plant currently under construction in Dr. Porfirio Parra. This wastewater treatment facility will have sufficient capacity installed to receive and treat wastewater from the three communities during the lifecycle of the facility.

2. Human Health and Environment

2.a Compliance with Applicable Environmental Laws and Regulations.

Environmental and Public Health Needs Addressed by the Proposed Project:

Wastewater collection is not available to residents of the project area, and thus wastewater is discharged to open air areas, latrines, or cesspools.

The lack of sanitary wastewater collection and treatment in the project area results in untreated wastewater runoffs, which create a risk for the transmission of diseases due to the potential for human contact with unhealthy waters and soil contamination.

The Project Meets the Following Applicable Environmental Laws and Regulations:

Final Designs for the sanitary wastewater collection systems were developed pursuant to regulations contained in Official Mexican Standard NOM-001-CNA-1995, which establishes specifications for hermeticity of pipelines used for sanitary sewage systems.

The design of the wastewater treatment system was based on the water, wastewater collection, and treatment manual developed by Mexico's National Water Commission, and will comply with the provisions of Official Mexican Standards NOM-001-SEMARNAT-1996 and NOM-004-SEMARNAT-2002.

The construction of the proposed project will follow the guidelines established by the National Water Commission (CONAGUA) for the construction of this type of infrastructure. Additionally, the tasks to be developed are not expected to impact protected areas or ecological reserves, as they will be developed in urban and rural areas previously impacted. During the implementation of the project, JCAS and CONAGUA will oversee the tasks for conformance with the aforesaid guidelines.

2.b Human Health and Environmental Impacts.

Human Health Impacts

Direct and Indirect Benefits to Human Health:

The implementation of the project will help reduce groundwater, surface water, and soil contamination in the region.

Health Statistics:

Water borne diseases are caused by pathogenic microorganisms that are directly transmitted as a result of inadequate wastewater disposal practices and

unhealthy water supplies. An individual may become ill after drinking water that has been contaminated with these organisms; eating uncooked foods that have been in contact with contaminated water; or having bad hygiene habits that contribute to the dissemination of diseases by direct or indirect human contact. Water borne diseases may be caused by protozoans, viruses, bacteria, and intestinal parasites.

Supporting Figures:

Table 1. Gastrointestinal Diseases in the Juarez Area

HEALTH SERVICES OF CHIHUAHUA SANITARY JURISDICTION, JUAREZ EPIDEMIOLOGY DEPARTMENT					
GASTROINTESTINAL DISEASES PER TYPE AND YEAR					
IN THE JUAREZ AREA YEARS 2003 TO 2007					
	YEAR				
DISEASE	2003	2004	2005	2006	2007
AMEBIASIS	1012	914	863	934	863
INTESTINAL ILLNESESS	48721	49666	41123	42806	41526
PARATYPHOID AND OTHER	488	656	1075	1367	1087
OTHER HELMITIASIS	3259	3087	1407	1247	1555
TYPHOID FEVER	38	54	11	42	60
SHIGELLOSIS	6	30	17	14	29
VIPERIN PATITIS-A	112	181	76	54	
96	GIARDIASIS	202	225	100	83
27	ASCARIASIS	69	10	9	6
18	OXIUROS	78	34	18	31

SOURCE: WEEKLY REPORT OF DISEASES NEW CASES

Environmental Impacts

Direct and indirect benefits:

The environmental impact resulting from the project will be positive overall, inasmuch as the project will help supply wastewater collection and treatment services to 100% of the community, reducing the risk of wastewater seepage resulting from the use of latrines and cesspools. Additionally, all the proposed tasks will be carried out in areas that have previously been impacted.

Environmental impacts:

Minor environmental impacts are anticipated from the development of the different project phases, provided the project tasks are implemented in accordance with the specifications of the Environmental Impact Statement and taking into account the mitigation measures established in it.

Potential impacts include the following:

Construction Phase

- Fugitive dust emissions.
- Gas emissions from construction machinery.
- Temporary roadway blockages, presence of workers in the area.

Mitigation measures:

Mitigation measures will include:

- Application of water to reduce fugitive dust emissions.
- Vehicle tune ups to reduce emissions.
- Placement of warning signage to prevent potentially hazardous situations.

Impacts:

The environmental impact resulting from the project will be positive overall, inasmuch as:

The project will increase wastewater collection and treatment coverage, reducing environmental contamination and improving the quality of life of area residents by reducing potential health hazards.

Transboundary Impacts:

No negative transboundary impacts are anticipated as a result of the development of wastewater collection and treatment tasks. On the contrary, wastewater treated at the Dr. Porfirio Parra WWTP will produce a beneficial effect for the U.S. side of the border, inasmuch as water flowing to the Rio Grande through the "Interceptor Drain" will have improved quality.

Formal Environmental Clearance

Environmental clearance:

Pursuant to the provisions of the General Law on Ecological Balance and Environmental Protection regarding Environmental Impact Statements, Mexico's Secretariat of the Environmental and Natural Resources (SEMARNAT) established through official communication SG.IR 08-2006/093 that the project requires an Environmental Impact Statement. An EIS was prepared and submitted to SEMARNAT on February 21, 2007, and the corresponding finding was

issued on May 4, 2007, having determined that the project complies with all the requirements of the Mexican environmental clearance process.

Pursuant to the U.S. National Environmental Policy Act (NEPA), a transboundary impact study was developed and submitted for consideration to the United States Environmental Protection Agency (EPA).

A 30-day public comment period started on December 7, 2006. Ultimately, a Finding of No Significant Impact (FNSI) was issued by the EPA on January 6, 2007, establishing that the project will not result in significant environmental impacts that may affect the U.S. border area.

The project addresses a significant human health and environmental problem.

Pending Issues

None.

Criterion Summary:

Environmental studies and their corresponding clearances were included and developed as part of the wastewater collection and treatment project for Dr. Porfirio Parra, inasmuch as the Wastewater Treatment Plant proposed for this community will also serve the communities of Barreales and Juarez y Reforma, since the communities are very near.

3. Technical Feasibility

3.a Technical Aspects

Project Development Requirements

Design criteria:

The project was developed pursuant to technical specifications contained in the Wastewater Collection and Treatment Manual prepared by CONAGUA's Technical Directorate.

Project Components:

Wastewater Collection

For both communities, the expansion of the wastewater collection system includes the construction of sewer lines, subcollectors, mains, and household hook-ups as follows:

Construction of sewer lines

- 11,604 linear meters in length
- 20 cm diameter

Construction of mains

- 7,220 linear meters in length
- 25 to 38 cm diameter

Household discharge outlets

- 515 household hook-ups

By community:

Barreales

4,313 meters of 20 cm diameter pipelines
1,531 meters of 25 cm diameter pipelines
1,257 meters of 30 cm diameter pipelines
852 meters of 38 cm diameter pipelines
220 household hook-ups

Juárez-Reforma

7,291 meters of 20 cm diameter pipelines
2,280 meters of 30 cm diameter pipelines
1,300 meters of 38 cm diameter pipelines
295 household hook-ups

Wastewater Treatment

The proposed project includes the construction of an additional treatment module with capacity for 7.18 lps. This module includes only an anaerobic pond and a secondary or facultative pond, inasmuch as the polishing ponds, the wastewater lift station, and the conveyance line to the treatment system were included in the project prepared for the Dr. Porfirio Parra project.

Other Design Criteria:

The final design includes the implementation of green building practices as part of the technical construction specifications.

Appropriate Technology

Assessment of alternatives:

Wastewater Collection

In order to design an appropriate wastewater collection system that may operate efficiently, final designs were developed to expand the wastewater collection system in the two communities. These include the construction of sewer lines, subcollectors, mains, and household hook-ups, which will collect and convey wastewater from the two communities to the Dr. Porfirio Parra Wastewater Treatment Plant for treatment.

Inasmuch as these tasks are complementary to an existing comprehensive wastewater collection system, and since they may only be developed in projected sites and/or along previously established routes, project alternatives consist of only two scenarios:

Alternative 1. No action alternative. This alternative was dismissed, given that this scenario would allow for continued contamination of surface and ground water, as well as overall environmental contamination as a result of the disposal of wastewater produced by both communities directly into the ground or agricultural drains, with the associated health problems caused by water borne diseases. The environmental and human health cost is too high.

Alternative 2. Expansion of the sanitary sewage system, including sewer lines, subcollectors, and mains to collect wastewater produced by the two communities and convey it to the Dr. Porfirio Parra Wastewater Treatment Plan. This action will help preventing the contamination of soil and agricultural drains in the area, and will improve health and environmental conditions for area residents.

Wastewater Treatment

Alternatives reviewed for the additional treatment module were included in the certification document for the Dr. Porfirio Parra project.

Property and Right-of-Way Requirements

Requirements:

Inasmuch as wastewater collection lines will be laid on municipal rights of way and easements, no additional land needs to be purchased for the project.

The site where the additional treatment module will be installed is owned by the Junta Rural de Porfirio Parra (local utility), and is within the premises of the WWTP that is currently under construction for this community.

Project Tasks and Timelines

Project Timeline:

The construction of the wastewater collection system for the two communities is estimated to begin in July 2008 and should be completed by April 2009.

The two Wastewater Treatment Plant modules are currently under construction and are estimated to be completed by December 2008.

Figure 6 shows the proposed task schedule.

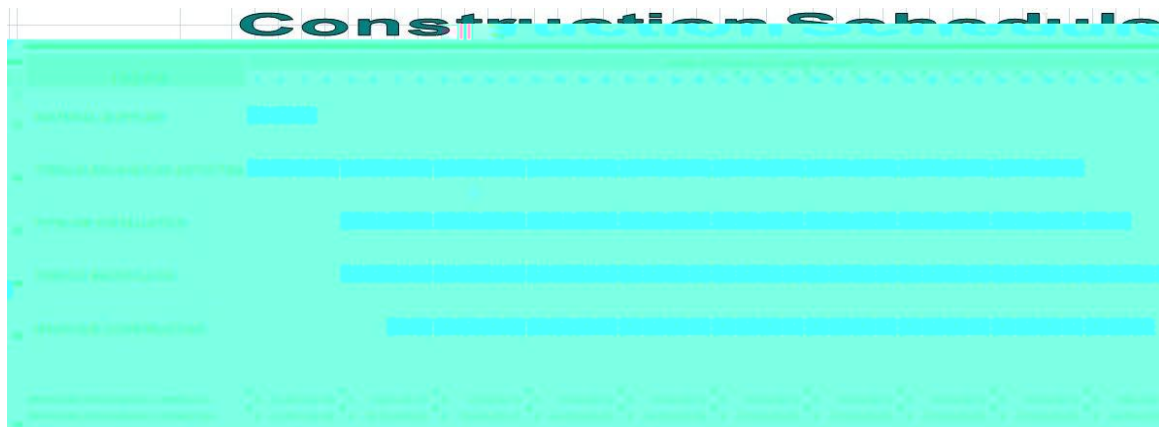


Fig. 6 Project Task Schedule.

3.b Management and Operations

Project Management

Resources:

The management, construction, and operation of the proposed project will be the responsibility of the applicant. The applicant has sufficient resources and staff for this purpose.

The state utility, Junta Central de Agua y Saneamiento del Estado de Chihuahua, will provide assistance to the JRAS for the operation and oversight of the proposed project.

Operation and Maintenance

Organization:

JRAS has a President, Sec6z, re4(be)TJO -1.1475 TD.0005 Tc80

maintenance of wastewater collection and treatment systems.

Pretreatment:

Inasmuch as the project area only includes residential users, JRAS has determined that the pretreatment program will conform to the Official Mexican Standard NOM-002-ECOL-1996, which establishes the maximum permissible levels of contaminants for wastewater discharges to urban or municipal wastewater collection systems. Compliance enforcement will be a responsibility of JRAS with assistance from JCAS.

Operation Plan:

The Final Design incorporates an Operation and Maintenance manual that includes the primary tasks needed to ensure a proper operation of the system and to prevent breakdowns in the proposed infrastructure. The Operation and Maintenance Manual presented as part of the final designs includes the primary activities needed to ensure the preventive maintenance of the wastewater collection and treatment system.

The operation and maintenance of the wastewater collection system and the wastewater treatment plant will be the responsibility of JRAS, under supervision of JCAS's technical staff.

Permits, Licenses, and Other Regulatory Requirements:

The project applicant has the following documentation available:

- Wastewater discharge permit (CONAGUA)
- Finding of No Impact to historical or cultural properties (INAH)
- Technical file validation issued by CONAGUA
- Federal Environmental Clearance
- FNSI

Reviewing agencies:

- COCEF
- CONAGUA
- Junta Central de Agua y Saneamiento de Chihuahua (JCAS)
- NADB

Pending Issues:

None.

Criterion Summary:

Projects proposed for the expansion of the Barreales and Juarez y Reforma wastewater collection systems and their corresponding wastewater treatment are directly linked to the Dr. Porfirio Parra wastewater treatment project that received BECC certification in 2007, inasmuch as the Wastewater Treatment Plant included in said project will receive and treat wastewater produced by these two communities prior to its disposal or reuse.

The Mexican and U.S. environmental clearances obtained for the Dr. Porfirio Parra project are valid for the project proposed herein. Such is also the case with the discharge permit, technical validations, and other permits that have been requested and obtained.

Final designs were prepared by the Junta Central de Agua y Saneamiento (JCAS).

4. Financial Feasibility

4.a Proof of Financial Feasibility

Financial Conditions

- Information Submitted:**
- Economic and demographic information of the Project’s area of influence;
 - Historical financial statements;
 - FY 2008 budget;
 - Utility’s customer base and receivables;
 - Estimated costs of the Project;
 - Investment commitments from participating entities; and
 - Estimated operation and maintenance expenses of the new treatment system resulting from the implementation of the project.

Results of the Analysis: The North American Development Bank (NADB) has reviewed the financial information presented by the *Junta Rural de Agua Potable de Porfirio Parra, Chihuahua* (“*JRAS de Porfirio Parra*”). Based on this information, it has been determined that the proposed financial structure for the Project is adequate.

Based on historical information and the cost of the project, estimated projections have been completed to determine its financial feasibility. The result of the analysis indicates that JRA de Porfirio Parra will be able to generate the cash flow necessary to meet the operation and maintenance costs of the additional system components, such as the expansion of the sewer collection system, conveyance lines to the ponds and maintenance for the oxidation ponds. Cash flows will also enable the funding of operations and replacement reserves.

Project Cost, Financial Structure, and Other Capital Funding Plans

Construction Cost: \$ 2.618 million dollars

Funding Scheme:

Source	Type	Amount	%
JCAS - Federal Programs	Grant	1,735,381	66.0
NADB BEIF (*)	Grant	882,400	34.0
Total:		2,617,781	100.0

Primary Source of Income

Source of Payment for the Project: This does not apply because none of the sources of funding being considered for this project include loans or other reimbursable components.

4.b Legal Considerations

Project Management:

The project will be managed by the sponsor, a utility that has adequate staff to manage the proposed infrastructure, as well as the capacity to address any potential emergency related to the project's operation and maintenance.

Pending Issues:

None

Criterion Summary:

During 2007 and 2008, the construction of the Wastewater treatment Plant (WWTP) in the town of Dr. Porfirio Parra was completed. This WWTP includes a lift station and was certified in 2007. The corresponding financial resources came from funds from the Federal and State Government of Mexico and the North America Development Bank through BEIF.

5. Public Participation

5.a Community Environmental Infrastructure Projects – Community-wide impact

Local Steering Committee

Date of Establishment: The Local Steering Committee was formally installed on January 25, 2007 at a meeting held in Porfirio Parra, Chihuahua.

Steering Committee Members: At this meeting, a Board of Directors was elected, comprised of the following individuals:
Chairman: Fausto González,
Secretary: Ramón Ramos,
Alternates: Mario Alberto Meza
Ana Isabel Balderas
Pascual Rodríguez

Others: Esteban Moreno. Technical Advisor

Date of Approval of Public Participation Plan: The Comprehensive Community Participation Plan developed by the Local Steering Committee was approved by the BECC on February 15, 2008.

Public Access to Project Information

Public Access to Project Information: The project's technical and financial information was made available to the public for review. The Local Steering Committee, with assistance from the project applicant, prepared the following:

- Flyers
- Megaphone advertising

The above was used to inform the community about the project.

Additional Outreach Activities:

- Development and dissemination of a project fact sheet
- Meetings with local organizations.
- Project surveys to document the community's concerns or support for the project.

First Public Meeting: Advance notice to announce the First Public Meeting was published in "Diario de Juarez," a local newspaper, on May 2, 2008.

The first meeting was used to inform the public about the technical aspects of the project. The meeting was held on June 6, 2008 at 6:00 p.m., in the Salón Ejidal in Porfirio Parra.

Attendees included Jose Manuel Pacheco, President of JRAS. The meeting was attended by 27 residents who answered project surveys. 100% of those surveyed said they were able to fully understand the project and explicitly expressed their support.

Second Public Meeting:

The second meeting was held on September 11, 2008 at the Salon Ejidal in Porfirio Parra. In this meeting were presented the financial aspects of the project. 25 people attended the meeting and surveys were administered during the event, and 100% of those surveyed expressed explicit support for the project.

Final Public Participation Report

Final PP Report:

The Local Steering Committee and the applicant prepared the Final Public Participation Report demonstrating that the proposed objectives were fully met to BECC's satisfaction.

Post-Certification Public Participation Activities

Post-Certification Activities:

The project applicant, in coordination with the Local Steering Committee, provided a general description of public participation activities that may be carried out after the project's certification to support its implementation and long-term feasibility.

Pending Issues:

None.

Criterion Summary:

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6. Sustainable Development

6.a Human and Institutional Capacity Building Institutional

Project Operation and Maintenance:

The project applicant will be the agency responsible for operating and maintaining the wastewater collection and treatment systems.

The applicant will have the basic institutional and human capacity to operate and maintain the proposed wastewater collection and treatment system.

Human and Institutional Capacity Building :

Actions within the scope of the project that contribute to institutional and human capacity building for the *Junta Central de Agua y Saneamiento de Chihuahua* include:

- Operating a wastewater collection and treatment system that meets applicable regulations.
- Training and education for the utility's operating staff throughout its different areas, to provide essential services that meet the needs of the community.
- Basic technical training to the operations and maintenance staff responsible for the new infrastructure that will be built as a result of the project's implementation.

6.b Conformance to applicable Local, State, and Regional Regulations and Conservation and Development Plans

Local and Regional Plans Addressed by the Project:

The proposed project conforms to applicable plans and actions described in the Master Plan for Improvements to Water, Wastewater Collection and Treatment Services, and adheres to the U.S.-Mexico Border 2012 Environmental Program by meeting Goal 1 (Reducing water contamination) and Objectives 1 (promoting an increase in the number of household connections to wastewater collection and treatment services) and 4 (promoting improve water utility efficiency). One of the program's guiding principles is to reduce major risks to public health and conserving and restoring the natural environment.

6.c Natural Resource Conservation

The project contributes to reduce environmental deterioration by expanding existing wastewater collection lines and providing the necessary means to connect 100% of the community to this service. Wastewater will be collected and conveyed to the new WWTP to improve its quality, so as to reduce aquifer contamination and human health hazards resulting from the discharge of raw wastewater to streams or agricultural drains.

6.d Community Development

The completion of this project is crucial to the development of the community. The tasks proposed by the project will contribute to reduce the conditions that favor the proliferation of water-borne and arboviral diseases.

The implementation of sanitary wastewater collection systems will promote community development, as it will reduce contamination in the region and improve the quality of life for residents of Barreales and Juarez y Reforma.

Pending Issues:

None.

Criterion Summary:

Available Project Documentation.

- Final Design of a Wastewater Treatment Plant for Dr. Porfirio Parra. Junta Central de Agua y Saneamiento de Chihuahua. 2006.
- Final Design of a Sanitary Wastewater Collection System for Barreales, Chih. Junta Central de Agua y Saneamiento de Chihuahua. 2006.
- Final Design of a Sanitary Wastewater Collection System for Juárez y Reforma, Chih. Junta Central de Agua y Saneamiento de Chihuahua. 2006.
- Official Communication dated January 4, 2006, requesting a finding by INAH regarding the existence of archeological sites in Dr. Porfirio Parra, Barreales, and Juarez y Reforma.
- Official Communication No. E/007-D/2006, in which INAH finds no objection to the development of the project in the Porfirio Parra, Barreales, and Juarez y Reforma areas, inasmuch as no archeological monuments or historical remains exist in the area. .
- EPA's Finding of No Significant Impact (FONSI) dated December 7, 2006.
- Consultation with SEMARNAT to determine jurisdiction and environmental assessment modality. Official Communication DT-305/2006, Junta Central de Agua y Saneamiento del Estado de Chihuahua, March 7, 2006.
- SEMARNAT's response regarding Environmental Impact Statement modality. Official Communication No. SG.IR. 08-2006/093, Chihuahua Federal Delegation, Subdivision of Environmental Protection and Natural Resource Management, April 3, 2006.
- "Preliminary Wastewater Collection and Treatment Project for Juárez y Reforma, Barreales, and Porfirio Parra, Municipality of Guadalupe, Chihuahua, Juarez Valley I." Developed by Sistemas de Ingeniería e Informática, S. C. (BECC, May 2005).
- Project's "Environmental Impact Statement," Ruling, SEMARNAT's State Delegation in Chihuahua, May 4, 2007.
- "Master Plan for Improvements to the Water, Wastewater Collection, and Treatment Services in riparian communities of the Upper Rio Grande, Developed by ICISA, (BECC, December 2000).